

## Science GE DOK Alignment Chart

## INQUIRY

## Grades 3-4

## GE 1-2

DOK & NECAP Release Item Codes	GE Statement with Ceiling DOK Level	Examples/Practice Items
<b>Enduring Knowledge (Scientific Questioning):</b> Students raise scientifically oriented questions that can be answered through observations, experimentation and/or research. At early stages, students learn how to develop investigable questions that guide their work. At later stages, students connect their questions to scientific ideas, concepts, and quantitative relationships that inform investigations.		
<p>All Inquiry GEs are assessed at the state level (NECAP Science).</p> <p><b>DOK 2</b></p>	<p><b>S3-4:1 (DOK 2)</b></p> <p>Students demonstrate their understanding of <b>SCIENTIFIC QUESTIONING</b> by...</p> <ul style="list-style-type: none"> <li>Identifying at least one <b>variable</b> that affects a system and using that <b>variable</b> to generate an <b>experimental question</b> that includes a <b>cause</b> and <b>effect</b> relationship</li> </ul>	
<b>Enduring Knowledge: (Predicting and Hypothesizing):</b> Scientists' explanations about what happens in the world come partly from what they observe and partly from what they think. Preliminary explanations are constructed with conceptual knowledge and propose a new level of understanding. At early stages, students think about what may happen during an investigation and justify their thinking. At later stages, students identify cause and effect relationships within an hypothesis and base predictions on factual evidence more than opinion.		
<p>All Inquiry GEs are assessed at the state level (NECAP Science).</p> <p><b>DOK 2</b> <b>LS1-1</b></p>	<p><b>S 3-4: 2 (DOK 2)</b></p> <p>Students demonstrate their understanding of <b>PREDICTING AND HYPOTHESIZING</b> by...</p> <ul style="list-style-type: none"> <li>Identifying simple patterns of <b>evidence</b> used to develop a <b>prediction</b> and propose an <b>explanation</b>.</li> </ul>	

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## Grades 3-4

## GE 3

DOK & NECAP Release Item Codes	GE Statement with Ceiling DOK Level	Examples/Practice Items
<b>Enduring Knowledge (Designing Experiments):</b> Students design investigations that control variables, generate adequate data/observations to provide reasonable explanations, and can be reproduced by other scientists. At early stages, experimental design reflects what the experimenter will do to answer a question and ensure that a test is fair. At later stages, students design investigations that will produce the appropriate kinds of evidence to support or refute an hypothesis. Multiple trials or the collection of multiple data points are incorporated into the design and variables are controlled to ensure that the investigation is valid and reproducible.		
<p>All Inquiry GEs are assessed at the state level (NECAP Science).</p> <p><b>DOK 3</b></p>	<p><b>S3-4:3 (DOK 3)</b></p> <p><b>Students demonstrate their understanding of EXPERIMENTAL DESIGN by...</b></p> <ul style="list-style-type: none"> <li>• Writing a <b>plan</b> related to the question that includes:             <ol style="list-style-type: none"> <li>a. A list of materials needed.</li> <li>b. A <b>diagram</b> with important elements labeled that supports procedures and illustrates the setup.</li> <li>c. A procedure that lists steps sequentially (beginning, middle, and end) and describes how the experimenter will manipulate or change only one <b>variable</b> at a time (<b>“Fair Test”</b>).</li> <li>d. Appropriate timing between <b>observations</b> (intervals) and/or number of <b>trials</b> needed.</li> </ol> </li> </ul>	

## Science GE DOK Alignment Chart

## INQUIRY

## Grades 3-4

## GE 4

DOK & NECAP Release Item Codes	GE Statement with Ceiling DOK	Examples/Practice Items
<b>Enduring Knowledge (Conducting Experiments):</b> Students follow an experimental design and use scientific tools (including measurement tools) appropriately and accurately. At early stages, students are encouraged to pay close attention to their experimental plan and record data throughout an investigation. At later stages, students engage in extended investigations and use more sophisticated science tools including computers.		
<p>All Inquiry GEs are assessed at the state level (NECAP Science).</p> <p><b>DOK 1</b></p> <p><b>DOK 2</b></p> <p><b>DOK 2</b></p> <p><b>DOK 1</b></p> <p><b>DOK 2</b></p> <p><b>DOK 2</b></p>	<p><b>S3-4:4 (DOK 2)</b></p> <p><b>Students demonstrate their ability to CONDUCT EXPERIMENTS by...</b></p> <ul style="list-style-type: none"> <li>• Referring to and following a detailed <b>plan</b> for an investigation.</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>• Clearly describing <b>evidence</b> and quantifying <b>observations</b> with appropriate units.</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>• Recording <b>data</b> at various points during an investigation by reporting what actually happens, even when <b>data</b> conflicts with expectations.</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>• Recording the sequence in which events take place.</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>• Recording relevant details of an object and its surroundings when applicable.</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>• Drawing scientifically:             <ol style="list-style-type: none"> <li>a. Recording varying degrees of color, shading or <b>texture</b>, and consistent proportion throughout.</li> <li>b. Labeling significant parts of a scientific drawing or <b>diagram</b> and including a <b>key</b> if necessary.</li> </ol> </li> </ul>	

DOK & NECAP Release Item Codes	GE Statement with Ceiling DOK	Examples/Practice Items
<b>Enduring Knowledge (Representing Data and Analysis):</b> Students represent data using text, charts, tables, graphs.		
<p>All Inquiry GEs are assessed at the state level (NECAP Science).</p> <p><b>DOK 3</b></p> <p><b>DOK 2</b></p> <p><b>DOK 2</b></p> <p><b>DOK 1</b></p> <p><b>DOK 1</b></p>	<p><b>S3-4:5 (DOK 3)</b>  <b>Students demonstrate their ability to REPRESENT DATA by...</b></p> <ul style="list-style-type: none"> <li>• <b>Classifying</b> objects and phenomena into sets and subsets and justifying groupings.</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>• Displaying and labeling <b>data</b> for separate <b>trials/observations</b>.</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>• Determining an appropriate representation (<b>graph</b> or <b>table</b> or <b>chart</b> or <b>diagram</b>) to represent their findings most accurately.</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>• Including in <b>tables</b> a <b>title</b>, labeled rows and columns and any necessary <b>keys</b>.</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>• Including in <b>graphs</b> a <b>title</b>, labels, scale, and recording <b>data</b> correctly.</li> </ul>	
<p>All Inquiry GEs are assessed at the state level (NECAP Science).</p> <p><b>DOK 3</b></p> <p><b>DOK 3</b></p>	<p><b>S 3-4: 6 (DOK 3)</b>  <b>Students demonstrate their ability to ANALYZE DATA by...</b></p> <ul style="list-style-type: none"> <li>• Interpreting patterns or trends in <b>data</b>.</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>• Relating <b>data</b> to the original question and <b>prediction</b>.</li> </ul>	

DOK & NECAP Release Item Codes	GE Statement with Ceiling DOK	Examples/Practice Items
<b>Representing Data and Analysis</b> (continued)		
<p>All Inquiry GEs are assessed at the state level (NECAP Science).</p> <p><b>DOK 3</b></p> <p><b>DOK 2</b></p>	<p><b>S3-4:7 (DOK 3)</b> Students demonstrate their ability to <b>EXPLAIN DATA</b> by...</p> <ul style="list-style-type: none"> <li>• Providing a reasonable <b>explanation</b> that accurately reflects <b>data</b>.</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>• Identifying differences between proposed <b>predictions</b> and experimental <b>data</b>.</li> </ul>	
<p><b>Enduring Knowledge (Applying Results):</b> Students synthesize the results of an investigation by generating new questions related to the results of the investigation, stating a general rule regarding the understandings learned from the investigation, or applying the understandings learned to similar situations. At early stages, students make connections between classroom investigations and similar situations or experiences. At later stages, students recognize that different explanations can sometimes arise from the same evidence. Students demonstrate an ability to resist overgeneralization based on insufficient evidence and suggest the types of evidence that need to be gathered in order to better understand the focus of the investigation.</p>		
<p>All Inquiry GEs are assessed at the state level (NECAP Science).</p> <p><b>DOK 2</b></p> <p><b>DOK 3</b></p> <p><b>DOK 2</b></p>	<p><b>S3-4:8 (DOK 3)</b> Students demonstrate their ability to <b>APPLY RESULTS</b> by...</p> <ul style="list-style-type: none"> <li>• Generating a new question to obtain additional information.</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>• Creating a <b>plan</b> to investigate a scientific concept further.</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>• Connecting the investigation or <b>model</b> to a real world example.</li> </ul>	